

ABSTRACT

A metallic barrier (1) and a method for separating fuel (5) and oxidant (6) gases are disclosed for use in high temperature systems such as solid oxide fuel cells (SOFC) or cell stacks. The metallic barrier (1) can be formed as a metallic bipolar separator plate or a seal, without requiring the use of chromium alloys or noble metals. Controlled diffusion of fuel gas (5) through the metallic barrier (1) limits the thickness of an adherent electronically insulating oxide layer (4) on an opposing surface in contact with oxidant gas (6). This stabilized oxide layer may be penetrated by refractory conductive particles such as doped lanthanum chromite to provide multiple electronically conductive paths through the oxide layer and the metallic barrier.